Identification, prioritization and collaboration strategies for restoration of a landscape across multi-jurisdictional boundaries: The Southwest Jemez Mountains Landscape Restoration Project

Jennifer M. Cramer and Jon T. Williams, Santa Fe National Forest, USDA Forest Service, Santa Fe, NM 87508

Abstract: In August 2010 the Southwest Jemez Mountains Landscape Restoration Project was selected as one of ten projects nationwide to receive funding as part of the Collaborative Forest Landscape Restoration Program (CFLRP). The goal of the project is to improve the resilience of ecosystems to recover from wildfires and other natural disturbance events in order to sustain healthy forests and watersheds for future generations. The project was developed by identifying and prioritizing landscapes; and working collaboratively with partners to develop a strategy for ecological restoration on 210,000 acres in the Jemez Mountains of Northern New Mexico. Landscapes in need of restoration were identified at the scale of 6th code watersheds using modeled fire behavior and crown fire potential, Wildland Urban Interface Areas, and the potential for commercial forest products to offset the cost of restoration treatments. The project area chosen spans 12, 6th code watersheds within the Jemez River Watershed and across boundaries of the Santa Fe National Forest, Valles Caldera National Preserve, and Jemez Pueblo. The project area abuts Santa Clara Pueblo and Bandelier National Monument. The cross-jurisdictional landscape presented an opportunity for collaboration among several agencies and stakeholders on the strategy of treatments. Ultimately the collaboration grew to include collaborators comprising 43 government agencies, tribes, and non-government organizations who met to define restoration goals and objectives and identify and prioritize treatments for the landscape. The resulting collaborative strategy for the project emphasizes restoring the resilience and adaptive capacity of an array of ecosystems; from grasslands and low elevation pinon-juniper woodlands to upper montane coniferous, sub-alpine and alpine forests; by implementing treatments of forest thinning, prescribed fire, management of natural fires, road closures and decommissioning, riparian zone restoration projects, and fisheries and wildlife habitat improvement projects.

Why Landscape?

- The single greatest threat to forested ecosystems on the Santa Fe National Forest (SFNF) is uncharacteristically intense and severe wildfires **(Figure 1).**
- Landscape scale projects (>10,000 acres) were embraced by the Forest Leadership Team as a way to gain efficiencies (cost and planning) and accelerate restoration work.

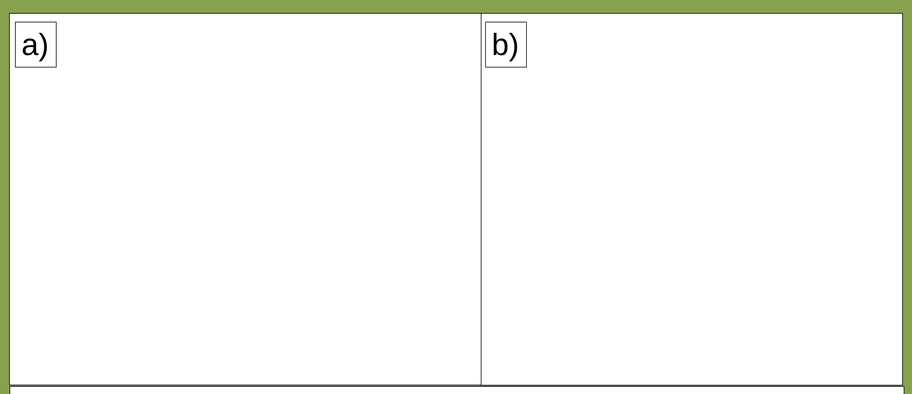

Figure 1: a) The Cerro Grande Fire (45,000 acres) of 2000 demonstrates the threat of uncharacteristically severe wildfire on the Santa Fe National Forest. b) Lightning caused fires/square mile on the Santa Fe National Forest from 1960-2009, the Southwest Jemez Mountains Landscape exhibits the highest density.

Identifying the Landscape

- In 2007, the SFNF evaluated 177, 6th Code Watersheds across the forest.
- Watersheds were ranked based on three characteristics in the following order of priority:

1)Potential commercial product acres (to offset treatment costs)
Method: GIS was used to identify areas in ponderosa and mixed conifer forest types.
Results: 268,000 acres had potential for product removal, >75% of total acres identified in the Forest Plan.

2)Crown fire potential acres
Method: FLAMMAP fire model with LANDFIRE used to model potential fire behavior.
Results: 532,500 acres were identified to have the potential for both active and passive crown fires.

3)Wildland Urban Interface (WUI) acres
Method: GIS layer determined by planning status or status determined by fire analysts.
Results: 516,500 WUI acres identified on the forest.

Top 15 watersheds were prioritized by forest leadership.

Rio Guadalupe watershed, >38,000 acres, chosen as top priority and used as a starting point to aggregate watersheds into the Southwest Jemez Mountains Landscape (SWJM).

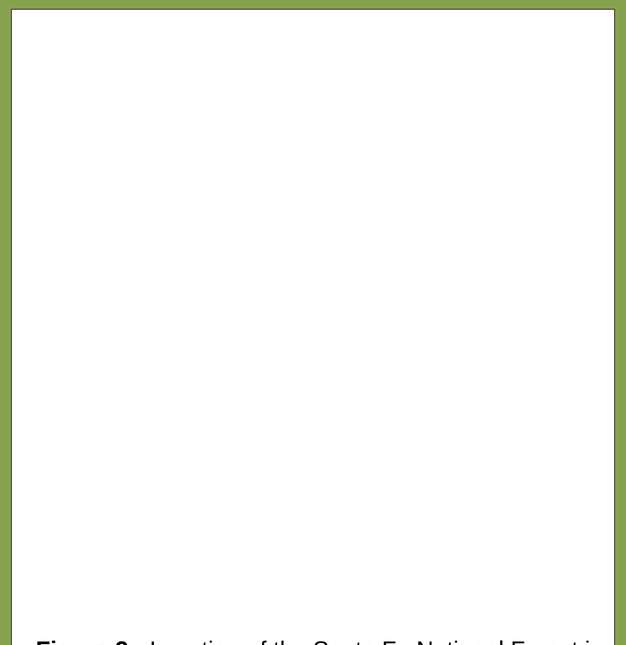

Figure 2: Location of the Santa Fe National Forest in the state of New Mexico (inset) and the boundary and jurisdictions for the Southwest Jemez Mountains Landscape Restoration Project.

Southwest Jemez Mountains Landscape

- 210,000 acre landscape within the Jemez River Watershed (4th HUC) and including the entire Valles Caldera **(Figure 2)**.
- Comprises 12, 6th code watersheds, including three of the SFNF's top 15 priority watersheds **(see "Identifying the Landscape").**
- Past livestock grazing, logging and fire suppression radically altered the landscape, creating the need for restoration **(Figure 3)**.
- Selected as one of 10 projects nationwide to receive the Collaborative Forest Landscape Restoration Program (CFLRP) Fund.

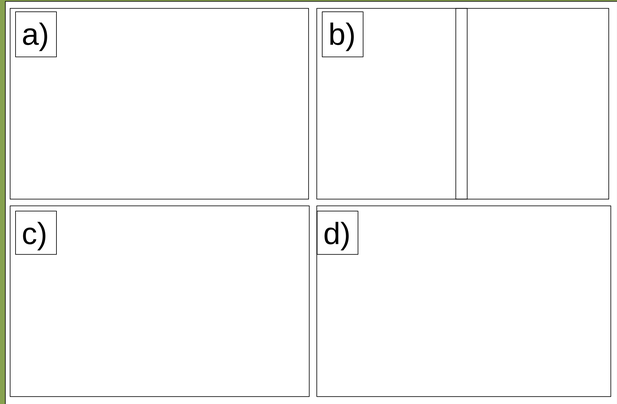

Figure 3: Need for restoration (a and c) and restoration action (b and d) examples for forested and riparian ecosystems. a) Dense, homogenous, mid-age stands of ponderosa pine pose a serious risk for uncharacteristically large and intense wildfires. b) Thinning and burning treatments restore the landscape to uneven aged stands with more open canopies. c) Eroding stream banks like this are good candidates for riparian restoration. d) Seeding and willow planting along stream banks stop erosion and improve stream quality.

The Goal of the Southwest Jemez Mountains Landscape Restoration Project is to improve the resilience of ecosystems to adapt to and recover from disturbances such as wildfires, insect and disease out breaks, droughts, and climate change.

Collaboration

Foundations

- 2000 - Cerro Grande Fire (**Figure 1a)** encouraged cross-jurisdictional planning to reduce future risk of large high-intensity wildfires in the Jemez Mountains.
- 2003 - Jemez Mountains Fire Learning Network completed an assessment of ecosystem conditions and restoration needs in the Jemez Watershed.
- 2004 – NM Environment Department convened collaborative group to complete watershed conditions assessment and Watershed Restoration Action Strategy for the area.
- 2001-2007 – 7 Community Forest Restoration Program (CFRP) projects received grants for collaborative project planning and projects in the Jemez Mountains.

The Southwest Jemez Mountains Collaborative Forest Landscape Restoration Project (2008-2010)

- Forest leadership identified the Southwest Jemez Mountains as a priority for landscape scale management **(see "Identifying the Landscape")**.
- The Santa Fe National Forest, Valles Caldera Trust, New Mexico Forest and Watershed Restoration Institute, The Nature Conservancy, and Pueblo of Jemez lead a collaborative restoration strategy based on the Collaborative Forest Landscape Restoration Act.
- The project grew to include 43 government agencies, tribes, and non-government organizations **(see "Collaboration Participants")**.
- In February 2010, over 60 participants from 30 organizations participated in a 3-day workshop and developed restoration goals, needs, objectives and identified and prioritized treatments and locations.

Collaboration Participants

Government Agencies and Tribes

Los Alamos County, Fire Dept.
New Mexico Dept. of Game and Fish
New Mexico ENMRD-State Forestry
New Mexico Environment Dept, Surface Water
Pueblo of Jemez
Pueblo of Santa Clara
Sandoval County, Fire Dept.
Soil and Water Conservation District, Cuba
US DOE Los Alamos National Laboratory
USGS Jemez Mountains Ecological Field Station
USDA Forest Service
USDA-FS Rocky Mountain Research Station
USDA Natural Resource Conservation Service
USDI BIA, Northern & Southern Pueblos Agencies
USDI Fish & Wildlife Service, Ecol. Svc. Field Office
USDI NPS Bandelier National Monument
Village of Jemez Springs

Non-Government Organizations

Cuba Regional Economic Development Org.
Forest Guild
Four Corners Institute
Hawks Aloft
La Cueva Volunteer Fire Dept.
Las Comunidades
Region Council of Governments
Wildlife Federation
NM Forest &Watershed Restoration Institute
NM Forest Industry Association
NM State University
NM Trout
Northern NM College, Forestry Dept.
Northern Arizona University
Restoration Solutions
Rocky Mountain Elk Foundation
The Nature Conservancy, New Mexico
Thompson Ridge & Sierra de los Pinos POAs
Trout Unlimited, Truchas Chapter Mid-
University of Arizona National
University of New Mexico
USA Firewise, Gr. E. Jemez WUI Working Group
Valdez Logging
Valles Caldera Trust
WildEarth Guardians
Wild Turkey Federation

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